

## Juvenile Monitoring Satellite Project Work Team

Meeting Notes  
December 2, 2004  
Yolo Bypass Wildlife Area

Participants: Bill Poytress (FWS), Michelle Workman (EBMUD), Jim Earley (FWS), Richard Corwin (USBR), Erin Chappell (DWR), Colleen Harvey-Arrison (DFG), Jason Kindopp (DWR), Matt Brown (FWS), Pat Brandes (FWS), Alice Low (DFG), Tracy McReynolds (DFG)

**I. Modify/Adopt draft meeting notes from 8/5/04** - The previous meeting notes were adopted with no changes.

**II. Modify/Adopt agenda** - The agenda was adopted with no changes.

**III. Discussion topic: Length-at-date criteria (run designation).**

a) Introductory presentation – **Bill Poytress (FWS)** made a brief presentation of the Frank Fisher growth model. He described some of the attributes that eventually formed the length-at-date table (model [revised] put into a daily format by Sheila Greene) that many of the juvenile monitoring programs use to determine run of Chinook captured in various sampling gears. This presentation (and each additional presentation) was given in an open format whereby discussion occurred by group members throughout the presentation, as opposed to question and answer at the end.

b) Featured presentations:

**Matt Brown (FWS):** *Future Work in Clear Creek and Battle Creek related to juvenile length criteria.* Matt described recent work on Clear Creek (CC) comparing growth of juvenile Chinook using the Fisher model with Clear Creek temperature unit (TU) data. TU data was acquired by placing a multitude of temperature loggers in the creek, many adjacent to spawning areas. The TU data results were found to be similar to Fisher model results. It appears that ~1850 TU is appropriate for CC. He then discussed picket weir operations attempting to isolate spring Chinook (SCS) from fall Chinook (FCS) whose return timing appears to overlap in the upper reaches of CC. He indicated that it has worked well. Approximately 30% of the SCS adults were found below the weir after installation. FCS were kept out of the upper reach (primary SCS spawning area) in 2003. Additionally, the program installed a 5 foot diameter rotary-screw trap in the upper reach to monitor juvenile SCS emigration. This is the second trap in CC, the primary trap is located in lower CC. These projects were initiated due to suspected problems using length-at-date criteria, whereby SCS juveniles had likely been misidentified as FCS juveniles at the lower CC rotary-trap skewing abundance estimates. The plan is to now use the upper trap for estimating abundance of SCS juveniles. Additionally, the program plans to use genetic sampling to gather baseline

information of adults in CC and to potentially apply proportions of SCS/FCS to juveniles captured in rotary-traps.

**Comments/Discussion:** **C. Arrison** asked if coordination of genetic information is occurring. **M. Brown** replied yes in terms of coordination with Sheila Greene's salvage operations. **A. Low** indicated that the markers used were the same and results have been consistent. **C. Arrison** asked if Michael Banks and Carlos Garza were using the same markers. **A. Low** said we should ask to be positive. **T. McReynolds** said she had supplied Garza with ten whole carcasses from Butte Creek to distribute to eight labs in OR, CA, WA last year. They then supplied livers to refine baseline information. **A. Low** indicated it was a CALFED study funded 2 years ago. **M. Brown** indicated that Banks is putting in a Science PSP to work on more genetic studies.

**Tracy McReynolds (DFG):** *Utility of Juvenile Salmonid Growth Models for Discrimination of Central Valley Spring-run Chinook Salmon.* Tracy asked if you can refine the current length-at-date criteria to better suit upper Sacramento tributaries and answered probably not. She described the Fisher model as it pertains to Butte, Mill and Deer Creek juvenile emigration data acquired via rotary-traps. Tracy plotted capture data on top of the Fisher model curves and indicated that known SCS juveniles (from escapement survey data) were largely misidentified as FCS and that known SCS smolts were often misidentified as late fall and winter Chinook. Tracy then spoke of CWT studies that indicated juvenile migration between the Parrot-Phelan Diversion Dam and Maddock Road traps ranged between 5 and 102 days. She indicated that this shows that variable migration rates affect growth rates and thus have an effect on length-at-date run determination. She then described the allocation of known SCS using Fishers' river model and a revised "Delta" model. Use of the "Delta" model slightly improved the designation of SCS smolts primarily from Mill and Deer Creek.

**Comments/Discussion:** **T. McReynolds, P. Brandes, B. Poytress, M. Brown** and others described the progression of the Fisher model to present day length-at-date tables. In summary, Fisher produced growth curves in February 1992 report, Sheila Greene revised the information into a daily growth chart in May of 1992, Johnson et al. used the growth data to see how well it fit with beach seine data collected in the upper river in a November 1992 report. **T. McReynolds** indicated that with recent restoration activities more FCS adults have been passing upstream in Butte Creek. This year there was a slight temporal isolation between SCS and FCS adults. She indicated that Butte Creek has a maximum elevation of 1500ft for SCS adult migration and that a variety of hatchery origin CWT fish occur in the creek. Mill and Deer Creek, on the other hand, have a minimum elevation of 1500ft for SCS adult occurrence and flow isolates SCS from FCS typically by June. Additionally, a similar pattern of CWT straying occurs in these two tributaries. **C. Arrison** indicated that there is a high percentage of out-of-basin fish, according to CWT data, and this is a system-wide problem. She also mentioned she had attempted to redo growth rate curves based on collected data and that the correlation ( $r^2$ ) was poor. "Why put the lines?", she remarked. **J. Kindopp** noted a similar emigration pattern and problem of run assignment in the Feather River. **T. McReynolds** noted a similar conclusion as Matt Brown. **J. Kindopp** asked if there were any growth studies in the [lower] main stem Sacramento River. He also noted early immigrant and temperature issues between the low and high flow channels of the Feather. Low flow channel attracts mostly hatchery origin and high flow attracts mostly wild [non ad-clipped]. **E. Chappell** noted there is a bulk loss typically in March of winter size class or larger individuals.

Additionally, young of the year fry are also lost at this time. She also noted that it would be difficult to take a directed action for SCS (WCS are already being protected). Older juvenile class appears to account for WCS, SCS, and FCS/LCS smolts.

**Pat Brandes (FWS):** *Delta Monitoring and Length Criteria.* Pat presented information comparing Fisher growth curves (used in Delta monitoring) with Delta curves (used at the salvage facilities, created by Pierce and Greene). Pat believes it may be more appropriate to use the Fisher or river model curves at Sacramento trawl for winter Chinook identification, **based on limited genetic sample data-check presentation info**. She said more genetic sampling could assist in determining which curves to use for which locations. Chipp's Island trawl positively identified winter Chinook genetic samples taken from winter Chinook (according to river model length-at-date tables) gathered in 1996 and 1997, appear to better fit within the river model not the Delta model. Pat did mention that the number of samples analyzed was low ( $N=11$ ). Therefore more samples over a number of years are needed to better substantiate the initial results.

**Comments/Discussion:** The topic of genetic sampling and fish migration out of the upper river ensued. **A. Low** indicated that Rob Titus' (DFG) group was putting in a PSP for more sampling locations on the main stem Sacramento River below GCID and above Knight's landing. This may help to enlighten interested parties as to the what, where, and when of salmon migration in this area, typically deemed a data gap area. She indicated that the first phase would look at what sampling gear would be appropriate for the area, where it should be placed and at what times of the year sampling should be conducted. The second phase is to detail rearing habitat in this area. **P. Brandes** noted that it may be a good idea to have a genetic component added to the study proposal. **M. Brown** indicated that RBFWO and Hansen Environmental Inc. had done some studies in this area in 1999 with limited success.

**Erin Chappell (DWR):** *Salvage of Winter Run Chinook Based on Length Criteria and Genetic Information at the Delta Fish Facilities from 1995 to 2002.* Erin presented information regarding salvage facility genetic sampling of winter Chinook according to Delta model length-at-date criteria. Preliminary results indicate that winter Chinook are very genetically distinct compared to spring Chinook, as well as to fall and late-fall. At this time, no genetic differentiation can be made between fall and late-fall Chinook sampled at the salvage facilities. She indicated that using the current Delta model the facilities are consistently overestimating winter Chinook take. She mentioned as well that many fall/late-fall yearlings (grouped together thus far genetically) appear to occur at the facilities in March and April when winter Chinook smolts are typically entrained. She noted these results were somewhat unexpected. She also commented there is annual seasonal variability associated with the timing of larger sized Chinook found at the facilities.

**Comments/Discussion:** **J. Kindopp** asked about late-fall Chinook and why there is so little attention paid to this run of fish. **C. Arrison** responded that not much baseline information exists. **M. Brown** noted that there is baseline information from Clear Creek, Battle Creek and the main stem Sacramento River carcass surveys. The discussion then turned to genetics and **B. Poytress** asked about what operations are currently conducting genetic sampling or are planning to conduct genetic sampling in the near future. **E. Chappell** responded that due to the Biological Opinion requirements, the facilities are and further are calling for increased genetic sampling operations. She noted that it would not likely result in any real-time genetic

information that could be used to change export operations. She indicated the turn around time for genetic analysis is approximately 3 to 4 days. **M. Brown** noted that Battle Creek and Clear Creek will continue genetic sampling and that funds have been sought through the recent monitoring PSP. He also noted that if/when the Battle Creek restoration project is funded there are dedicated funds for future analysis of genetic samples. **J. Kindopp** noted that on the Feather River they sample otoliths and genetics and are currently storing them. He added that they need to be processed. **B. Poytress** then asked about potential coordination opportunities for genetic sampling. **P. Brandes** mentioned Steve Kramer's winter Chinook Life Cycle Model as an opportunity for the Red Bluff program to coordinate with. The participants all agreed that you need to have a definite question you are attempting to answer if you are to submit any PSP's for genetic sampling. **B. Poytress** added that it would likely be more important to address the overlap of fall and spring Chinook capture that occurs at Red Bluff in the fall/winter of each year. **M. Brown** and others noted that some of the genetic questions we are attempting to answer should be discussed by the Genetic Work Group.

In conclusion participants suggested that genetics can play a very important part in run designation, but efforts need to be standardized and consistent. Apparently the Abernathy Fish Technology Center uses the original 7 loci as markers for winter Chinook and Michael Banks is using more (~12 loci?). A. Low mentioned that Garza is using adult Chinook to get better baseline information.

#### **IV. Tentative Agenda Items for the proposed February 17<sup>th</sup> meeting:**

A number of pertinent topics were mentioned by group members including: stranding studies and methodologies, adult return straying information and juvenile habitat suitability studies (PHABSIM, snorkeling etc.).

The proposed next meeting of the Juvenile Monitoring Project Work Team is Thursday February 17<sup>th</sup>, the topic being juvenile Chinook stranding studies and methodologies.